

sing said analog random signal and said clock signal to produce a binary true random sequence of signals; and

interfacing said binary true random sequence of signals to a computer; and utilizing said true random sequence of signals in said computer.

- 42. A method as in claim 41 wherein said step of providing an analog random signal comprises a step of providing a source of thermal noise.
- 43. A method as in claim 41 wherein said step of providing a clock signal comprises providing an oscillator signal.
- 44. A method as in claim 41 and further including the step of reducing randomness defects in said true random sequence of binary signals.
- 45. A method as in claim 41 and further including the step of amplifying said analog random signal prior to said step of using.
 - 46. A true random number generator system comprising:
 - a source of analog random signals;
 - a source of a clock signal;
- a sampler for producing a binary true random sequence of signals from said analog random signals and said clock signal;
 - a computer for utilizing said binary true random sequence of signals; and an interface for applying said binary true random sequence of signals to said

computer.

- 47. A true random number generator system as in claim 46 wherein said source of analog random signals comprises a thermal noise source.
- 48. A true random number generator system as in claim 46 wherein said source of a clock signal includes an oscillator.
- 49. A true random number generator system as in claim 46 and further including a randomness corrector for reducing randomness defects in said binary true random sequence of signals.
- 50. A true random number generator system as in claim 49 wherein said randomness corrector comprises a system for performing an EXCLUSIVE OR function.

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5 A true random number generator system comprising:

a hardware device for producing a binary true random sequence of signals;

a randomness corrector for reducing randomness defects in said binary true random sequence of signals;

a computer for utilizing said binary true random sequence of signals; and an interface\for applying said binary true random sequence of signals to said computer.

- A true random number generator system as in claim 51 wherein said 52. randomness corrector comprises a system for performing an EXCLUSIVE OR function.
 - 53. A true random number generator system comprising:

a hardware device for producing a binary true random sequence of signals; and a computer for utilizing said binary true random sequence of signals;

wherein $|B_2| \le 0.002$ and $N(S_D(t)) \le 0.0004$, where B_2 is the fractional bias in the 1, 0 probability of said binary true random sequence of signals and SD(t) is the serial dependence as a function time of said binary true random sequence of signals.

- 54. A true random number generator system as in claim 53 wherein: $|B_2| \le 0.0004$; and $|SD(t)| \le 3.2 \times 10^{-7}$.
- 55. A true random number generator system as in claim 53 wherein: $|B_2| \le 3.2 \text{ x}$ 10^{-7} and $|SD(t)| \le 2.05 \times 10^{-13}$.
- 56. A method of producing a series of high quality true random numbers, said method comprising the steps of:

producing a binary true random sequence of signals in which $|B_2| \le 0.002$ and $|SD(t)| \le 0.0004$, where B₂ is the fractional bias in the 1, 0 probability of said binary true random sequence of signals and SD(t) is the serial dependence as a function time of said binary true random sequence of signals;

interfacing said binary true random sequence of signals to a computer; and utilizing said binary true random sequence of signals in said computer.

57. A method of producing a series of true random numbers, said method comprising:

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